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ORIGINAL ARTICLES.

THE RELATION OF THE GENERAL BLOOD PRESSURE TO THE PATHOGENESIS OF CERTAIN OPHTHALMIC DISEASES.*

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Lately I have had under observation a number of cases which seem to indicate the great importance of an accurate appreciation of the extent to which certain serious diseases of the eye are directly the result of, or greatly influenced by, marked changes in the general blood pressure. If the ocular condition is not an immediate result of the vascular changes, the question of a similar underlying cause is of equal importance. Naturally the solution of these two questions would prove of great assistance in choosing a logical course of treatment.

It would seem rather an act of supererogation to attempt, on so few data, any addition to our knowledge, for instance, of glaucoma. Yet the very uncertainty of the present attitude of the profession in regard to the pathogenesis of this disease creates a possible value in any study, however incomplete, directed towards the solution of the question.

I hope the members of the Society will excuse the repetition of what is well known if I review briefly the various most generally recognized theories which have been advanced to explain the origin of the increased intraocular tension.

Von Graefe attributed the abnormal tension to an increased excretion of fluid from the choroidal vessels. This abnormal

*Read before the St. Louis Ophthalmological Society, December, 1909.

excretion was the result of an active inflammation of the choroid—that is to say, a serous choroiditis. The objection to this theory has been that the existence of such an active inflammation of the choroid cannot always be demonstrated—in fact, a positive demonstration of its absence is the rule; nor is glaucoma always found even in the severest cases of serous choroiditis.

Donders also considered a hypersecretion of the choroidal vessels as the direct underlying cause, but ascribed this to the influence of the ciliary nerves—a sort of neurosis of secretion, thereby attempting to explain glaucoma simplex, where the absence of all inflammatory signs is the most striking symptom of the trouble.

Stellwag apparently was the first to suggest that increased blood pressure exerted a direct influence in producing the increase of the intraocular tension—but his explanation was merely that of a local obstruction to the return circulation of the blood in the vasa vorticosa—due to hardening of the sclera, the pressure being transmitted directly to the adjacent structures. The objection to all these theories has been that, other things being normal, a certain amount of fluid can be injected into the eye without causing any permanent increase of the intraocular tension. In other words, a compensation is rapidly established whereby the increased amount of fluid secreted or injected into the eye is carried off by the channels of exit. From this was deduced the theory, generally ascribed to Knies and Weber, and one which at present counts the most adherents. According to this theory, the ciliary processes become swollen in consequence of venous stasis, so that they press with their apices against the posterior surface of the base of the iris. The periphery of the iris is thus displaced forwards, often so far as to become adherent to the most anterior portion of the sclera, and the margin of the cornea, thereby blocking the filtration angle.

* Priestley Smith advanced the theory that a small cornea associated with a large lens produces this condition. These theories do not account for those cases of glaucoma simplex nor of inflammatory glaucoma where the base of the iris is found in its normal position and the cornea and lens are of normal size—a frequent experience as reported by many observers. The natural conclusion, that there are various causes at work which go to produce a clinical picture so multiform as that presented by glaucoma. At the present time it is apparently the general belief that the chief cause lies in some sort of obstruction to the outflow of the aqueous humor, due to changes in the anatomical

structure or relations at the filtration angle. The hardening of the connective tissue forming the ligamentum pectinatum, the blocking off thereby of the canal of Schlemm as well as the displacement forward of the base of the iris are factors to be considered. The fact that glaucoma is a disease of advancing years, appearing at that time of life when a general hardening of the connective tissue of the body is in progress would lead one to logically infer that the same cause, or combination of causes, is at work in both conditions. At the same time, it seems distinctly probable that the increase of the general blood pressure may react locally to at least aid in the production of the sudden changes that give us the picture of an acute glaucoma. It would be hard to demonstrate, with any degree of accuracy, to what extent the increase of blood pressure plays an active role in the production of glaucoma. Yet that it does play its part in this local melodrama seems to me beyond doubt. Exactly how or to what extent can naturally only be determined after a long series of accurate observations. It is on this point that I should like an expression from the members of the Society to-night. In looking at the subject from the standpoint of the eye in relation to the pathogenesis of this disease, there are two possibilities to be considered. First the effect of the increase of the general blood tension in producing cedema of, and a hypersecretion from, the ciliary body and iris. Secondly the possibility of the general blood pressure acting as an impediment to the exit of the fluid secreted. Both conditions may be present in the same case. That an increase of the normal blood tension may cause an cedema in other parts of the body has been definitely established, e. g., in the brain. Why should not such a condition present itself in the ciliary processes, where the arterioles are of the most delicate type, often with only a single layer of endothelial covering, with little or no support from the surrounding tissue. Such an cedema would cause a swelling of the ciliary processes, displacing the base of the iris forward, producing the condition which has so generally been considered the immediate cause of glaucoma.

Again, the local tendency to venus stasis would not only act in the same direction, but would also aid in blocking the return circulation through the canal of Schlemm by direct pressure on the venæ vorticosæ.*

*Note.—By this is meant the direct pressure exerted upon a vein by an adjacent hardened artery, when the artery crosses the vein and is surrounded by the hard scleral tissue.

I have at present under observation a case which seems to show clinically the value of the control of the general blood pressure in the treatment of glaucoma.

Mrs. M. S., age 62 years, reported October 2nd, 1909, giving the following history: On or about May 11th, patient had consulted Dr. — on account of sudden failure of vision of right eye. Through the courtesy of Dr. —, I report the condition as then found: V=fingers at 1 foot. The ophthalmoscope showed wide spread pectechial retinal hæmorrhages covering the central portion of the fundus. During May, there was only slight improvement in the vision. Sometime during the first part of June, while in the East near Boston, the patient developed an acute inflammatory glaucoma. During the summer, myotics were constantly used, with very little if any effect. The pupil remained widely dilated, anterior chamber shallow, deep circumcorneal injection, pain spasmodic. T+2. The use of the myotics was greatly handicapped on account of an intense increase of pain after instillation, often lasting for hours. On October 2nd, when patient first consulted me, the condition was about as above described, except that the pain had somewhat increased in constancy. T+2. V=0, no perception of light.

Operation (except enucleation) was deemed inadvisable on account of the extensive retinal hæmorrhages. The most careful use of the myotics (both eserine and pilocarpin in oil solutions of varying strengths) proved futile. Any solution of sufficient strength to produce any effect upon the iris caused such excessive pain that the patient refused treatment.

On October 18th patient was referred to Dr. Elsworth Smith, who found her blood pressure 160 m.m. Patient was put upon sodium nitrite and restricted as to diet and exercise. On November 1st the blood pressure had been reduced to 145. At this time the eye was more comfortable and the instillation of pilocarpin (gr. i to 3ii) produced very little discomfort and some slight contraction of the iris. Between November 1st and 4th patient refused to continue the internal treatment, with a resultant rise in blood pressure (155) and increase of ocular pain.

On resuming treatment, the blood pressure was gradually reduced to 138 (November 13th) and a few days later to 135, at which it has been practically retained. The ocular condition improved steadily. At present (January 15th, 1910) the eye has been almost entirely free of pain for over a month. Pilocarpin and eserine can be used regularly without much discomfort. The globe is practically free of injection. The pupil is still larger

than that of the normal eye, nor does eserine produce full contraction—T+1. The history of this case would seem to indicate a distinct value in the reduction of high blood pressure co-existent with a chronic inflammatory glaucoma, where an iridectomy was contraindicated, and the myotics alone had produced no effect, except to increase the discomfort of the patient.

The importance of the ocular symptoms of arteriosclerosis has long been recognized, especially as a warning to the patient. The appearance of retinal hæmorrhages is a danger signal that cannot be too strongly impressed on the patient. I report the following case merely as an interesting illustration:

Mr. D. P. D. was first seen June 15, 1909. Age 70. O.D. Hm. 3.5 d. V=20/24. O.S. Hm. 1.75 d. V=20/15. The retinal arteries showed some increase of the light streak, and markedly indented the veins at points of crossing. The veins, in places, showed marked nodules, optic discs were somewhat greyish, especially the right disc. There was some irregular contraction of the fields for color, with an interlacing of the fields for red and blue in the right eye. Patient was advised to put herself under the care of an internist but refused.

Patient returned in the fall (October 25th) with marked diminution of vision in right eye (with correction V=20/75). The retina showed numerous small areas of old hæmorrhages between macula and disc. Below the macula was a large sub-hyaloid hæmorrhage of the typical shape. The patient still refused to consult an internist. She later consulted Dr. John Green, who succeeded in impressing upon her the seriousness of the condition not only from the standpoint of the eye, but also that of her general health. At Dr. Green's insistence, a consultation with Dr. Elsworth Smith was held. The vision, O.D., had dropped to 2/150. Dr. Smith found a beginning general arteriosclerosis with slight increase in blood pressure (165). Under treatment of the general condition, the retinal hæmorrhage showed marked improvement, (when last seen, Dec. 6th, O.D. vision=20/75). If the patient had consented in the first instance to treatment directed to the general disease, which was evidently the cause of the ocular changes, the serious damage to sight might have been avoided.

The third case which I wish to report presented symptoms resembling, in some degree, ophthalmic migraine. Patient has been under observation since January, 1906. Left eye had been enucleated in childhood on account of an injury. Right eye vision, normal (Am. .5. Mo. vert'l, V=20/12), fundus normal.

During 1907 and 1908 patient occasionally complained of floating opacities before eye, causing only slight annoyance. Early in the fall of 1909 patient began to experience attacks lasting one-half to three-quarters of an hour, during which the sensation, as described by the patient, would be that of "flakes of snow." The attacks would be followed by headache, lasting for one to two hours. During this time patient would occasionally notice a transient diminution of central vision, lasting for a few seconds only. While reading, the word in direct line of fixation would become dim. There was no scintillating scotoma. Age of patient at this time, 51 years. On November 17th, patient was referred to Dr. Walter Baumgarten, who reported a blood pressure of 152—slightly accentuated second heart beat. Under the use of potassium iodide and sodium nitrite, the blood pressure was reduced to 144. Up to the present date, January 12th, 1910, patient has been entirely free of any attack.

EYE SYMPTOMS OF PELLAGRA.—PRELIMINARY
REPORT OF EXAMINATION OF EYES OF
FIFTY--FIVE PATIENTS.

Carroll B. Welton (*Jour. A. M. A.*, November 13, 1909), from his examination and study of the eyes of fifty-five cases of pellagra, offers the following conclusions:

1. Paralysis of the eye muscles is found in the later stage of the disease in a small percentage of cases; conjunctivitis is not an uncommon symptom. Early-forming cataracts are frequently noted, and the theory of the metabolic nature of pellagra is supported, because cataract is generally considered as an altered state of the nutrition of the lens when occurring in normal individuals. Inflammation of the optic nerve and retina is observed in a relatively large percentage of cases. Common, and most pronounced of all the eye changes, is involvement of the choroid.

2. In none of the cases presenting eye symptoms could the character of the eye changes be regarded as pathognomic of pellagra.

3. The severity of the eye symptoms runs parallel with the severity of the general manifestations of the disease and that the finding of marked eye changes adds to the gravity of the prognosis in pellagra and indicates, in a large percentage of cases, an early fatal termination.

A CASE OF CAVERNOUS LYMPHANGIOMA OF THE
BULBAR CONJUNCTIVA.

BY M. WIENER, M.D., AND ADOLF ALT, M.D.,
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The following history of the case was furnished by Dr. Wiener who, also, presented the case before the Ophthalmic Section of the St. Louis Medical Society:

B. I., aged 30, came under my service at the St. Louis City Hospital and was examined by me for the first time October 11, 1909. He entered the hospital August 3, 1909, when he was operated upon for strangulated hernia of the right side. On October 2, 1909, he was operated upon for hernia of the left side. On October 30, he was circumcised. He claimed never to have had any serious illness up to this time. Examination of the eyes showed the right eye to be normal. The left eye showed both lids very much thickened, the upper more than the lower, especially near the inner canthus, where the lid margin was between 6 mm. and 7 mm. in thickness, slightly compressible but not altogether so.

The conjunctiva was generally œdematous but very pronounced along the entire lower bulbar portion, so as to turn the lower lid outward. At the inner canthus, just externally to the region of the caruncle, and involving it was a growth, almost conical in shape, translucent, measuring at the base 11 mm. horizontally and 6 mm. vertically; the apex extending forward between the lids about 7 or 8 mm. (See Figure 1.)

The growth had never been painful, and, according to the statement of the patient and his family, it had been present at birth. The upper lid, he claims, was very much larger and thicker when he was a baby and young boy, but gradually it became smaller. The conical growth, however, began to increase in size about seven years ago, and has steadily grown up to the present time. At times the growth seemed to be larger than at others.

On October 18, 1909, the growth, under cocaine anæsthesia, was excised and the wound was closed by three conjunctival stitches. There was no bleeding at the time of the operation. The next morning at about five o'clock, blood began to ooze through the bandage, and continued to ooze even after a tighter bandage had been applied. On the third day the bandage was

removed and ice compresses were applied. Within 24 hours the bleeding had ceased, but the entire bulbar conjunctiva was infiltrated with blood. The stitches were removed on the fourth day.

On December 23, 1909, the œdema was greatly reduced in size and the blood almost all absorbed. The patient felt more



FIG. 1.

comfortable, being able to entirely approximate the lids.

The specimen was given to Dr. A. Alt for microscopical examination.

HISTOLOGICAL EXAMINATION.

Having seen the patient when presented at the meeting of the Ophthalmic Section of the St. Louis Medical Society, I want to emphasize the fact that the tumor proper sprang from the bulbar conjunctiva and did apparently not enter into the lids, although they were swollen and œdematous. It sat on the eyeball somewhat below the horizontal meridian and had evidently in its growth pulled the conjunctiva along as was evidenced by the

shortening of the conjunctiva of the lower lid and the flattening out of the semi-lunar fold. The tumor had a peculiar opalescent, semi-transparent appearance.

When I received the specimen in formol solution I was astonished to see how it had shrunk.

A microscopic section through its centre showed it to be covered with a thick epithelial layer, except at its base where it had been cut off. (See Fig. 2.)

The tissue proper of the tumor consists in the main of cavities varying considerably in size and shape. These cavities are separated from each other by thin walls consisting of a small

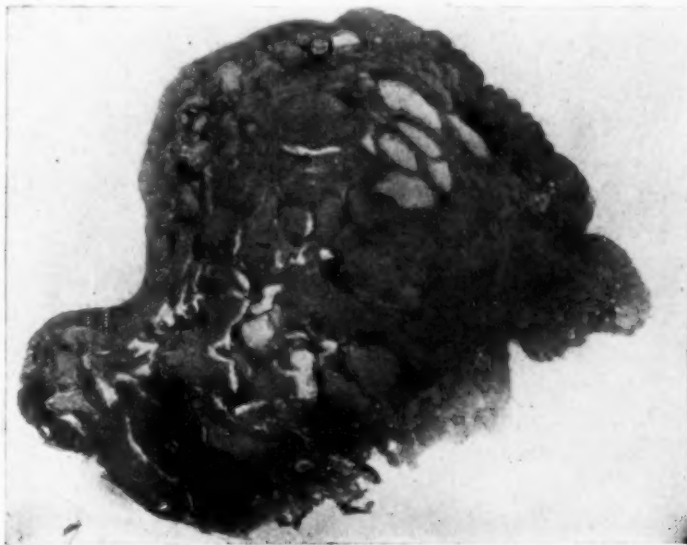


FIG. 2.

amount of connective tissue, in the sections bearing a covering of flat endothelial cells on both sides. Some of these walls consist of broader bands of connective tissue, others are so thin that the two endothelial surfaces are just barely separated from each other. In some places the separating wall is broken through at one place; in such a place the union of two neighboring cavities into one larger one is evidently going on.

The contents of the cavities consist of a grumous coagulated substance in which here and there a few lymphocytes are suspended either singly or in clusters. Especially near the base of the tumor this coagulated lymph is tinged reddish, evidently by blood having entered the cavities during the operation or soon after.

On the side of the plica semilunaris the tumor contains a comparatively large lacrimal gland with a wide efferent duct. (See



FIG. 3.

Fig. 3.) This gland is large enough to be easily seen, macroscopically even, in most of the sections. It is, of course, im-

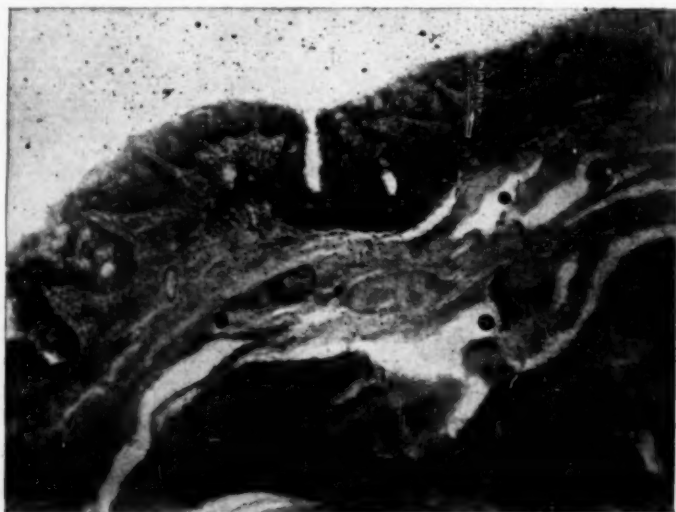


FIG. 4.

possible to say, whether this gland tissue was originally situated in the tumor or whether in the growth of the tumor a lacrimal gland was pulled from its original seat and thus misplaced. I am inclined to believe that the latter is the case. In studying the glandular structures in the eyelids I have in almost all lids which I examined found a lacrimal gland situated in the nasal conjunctiva of the lower lid, below the lacrimal caruncle, (Original contributions concerning the glandular structures appertaining to the human eye and its appendages, page 5 and illustrations 21 and 22), and it seems that the gland enclosed within the tumor under consideration corresponds to this conjunctival lacrimal gland.

The epithelial coat (see Fig. 4) covering the tumor is very much thicker than the normal conjunctival epithelium and at the apex of the tumor shows cornification.



FIG. 5.

The number of goblet cells is very large. In many places the epithelium shows the deep infoldings which appear like glandular structure and have even been mistaken for such (Henlé). In these folds the goblet cells are particularly numerous, as is well shown in the transverse section through such a fold in Fig. 5.

From the foregoing the histological diagnosis of the tumor is: *Cavernous lymphangioma of the bulbar conjunctiva.*

Lymphangioma of the conjunctiva is a rare affection, even if we include the cases in which the lids and orbit were, also, in-

vaded by such a tumor. Of purely conjunctival cases only very few are found in literature.

Parsons (*Pathology of the Eye*, Vol. I, p. 126) mentions a case which is almost the counterpart of ours. Another case reported with illustrations by M. Meyerhof, although not purely conjunctival, is also very similar in its histological structure. (*Klin. Monatsbl. fuer Augenhilk*, 1902, p. 300.) Meyerhof gives the literature up to 1902 and I have not been able to find a similar case reported since then, except the one of Parsons.

ANALYSES OF THE ASH OF THE NORMAL AND THE CATARACTOUS LENS.

W. E. Burge (*Arch. of Oph.*, September, 1909) has made careful analyses of a large number of crystalline lenses of both the human and pigs' eyes to determine what changes take place in old age. He obtained cataractous lenses that had been removed in capsule, both in this country and in India. A description of his method of analysis is given together with tables of results and conclusions drawn from them. He summarizes thus: "1. There is a decrease of potassium in the cataractous lens from 38.8 per cent. of the ash in the normal to 9.8 per cent. in cataract. 2. The calcium in the cataractous lens increases from an almost negligible quantity in the normal to 12.5 per cent in cataract. 3. There is an increase in the magnesium in the cataractous lens obtained in the United States from 1.20 per cent as estimated in the pigs' lens to 8.00 per cent. This increase is therefore not so marked as the increase in the calcium. 4. Assuming that the sodium in the normal pig lens is about the same in quantity as the sodium in the normal human lens, then the increase in sodium is practically of the same extent as the decrease in the potassium, the sodium increasing from 6.67 per cent. in the normal to 25.06 per cent in the cataractous condition. 5. The lenses obtained from India differ from those obtained from the United States in that they contain a large amount of calcium, potassium and possibly sodium silicate, and fail to show any increase in the percentage of magnesium in the ash."

ÆTIOLOGY AND TREATMENT OF CERTAIN FORMS
OF CONJUNCTIVITIS.*

BY J. F. SHOEMAKER, M.D.,
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Numerous classifications of the different kinds of conjunctivitis have been made. Possibly none of them is better than the following:

- (1) Catarrhal, or simple conjunctivitis;
- (2) Purulent conjunctivitis;
- (3) Croupous, or membranous conjunctivitis;
- (4) Diphtheritic conjunctivitis;
- (5) Follicular conjunctivitis;
- (6) Trachomatous, or granular conjunctivitis;
- (7) Vernal conjunctivitis; and
- (8) Phlyctenular, or scrofulous conjunctivitis.

Theobald says that "with the exception of diphtheritic and phlyctenular conjunctivitis, all of these different varieties of conjunctival inflammation are essentially local disorders." This statement, according to my experience, needs to be modified, as I have a number of times met with a type of catarrhal conjunctivitis which, in my opinion, is not purely a local condition, but distinctly dependent upon some general disorder, evidently some form of auto-intoxication.

According to Albu "auto-intoxication is a poisoning of the organism by the products of its own metabolism, which products may be either normal in character but excessive in amount, or abnormal in character." Bouchard, who has been one of the most diligent students of this subject, calls the human body both a receptacle and a laboratory of poisons. The food we eat contains these poisons; immense quantities of them occur as the food is being digested, and still others are set free during the process of waste and repair of the body cells. Thus toxic substances are being formed in the alimentary tract and in the tissues of the body not only in sickness, but in health, also. The reason we are not constantly being poisoned by them is, that nature has provided certain "organs of defence" to take care of these poisonous substances, either excreting them or converting them into harmless substances, so that they have no ill effects upon the body. Such organs as the liver, gastro-intestinal mucous mem-

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brane, spleen, lymphatic, thyroid and other ductless glands constitute one class of these organs of defence, while the kidneys, lungs, skin and intestines belong to another class. The organs of the first class arrest the toxic substances brought to them by the blood and lymph and transform them into non-poisonous substances which may be assimilated by the body. Those of the second class act simply as a sieve, separating those poisons which escape the other organs or those that are formed later in such tissues as the muscles and excreting them. The liver and intestinal mucous membrane belong to both of these classes, as they are both secretory and excretory organs.

Albu classifies the different auto-intoxications thus:

(1) Auto-Intoxication Caused by Failure of Function of Definite Glands. Examples of this are myxœdema, cachexia strumipriva and pancreatic diabetes.

(2) Auto-Intoxication by General Anomalies of Metabolism without Evident Localization. Examples of this class are diabetes in general, oxaluria, gout, etc., in which the products of both metabolism and retrograde metamorphosis are not brought to the final stage that they should be, when they are entirely harmless, but circulate in the blood as unfinished products, so to speak, in which form they often are quite poisonous and irritating.

(3) Auto-Intoxication through Retention of the Physiological Products of Metabolic Action in the Different Organs. Uraemia, and CO₂ poisoning where respiration is interfered with, illustrate this group.

(4) Auto-Intoxication through Excessive Production of Physiological and Pathological Products of the Organism. Acetonuria, diabetic coma, and the coma occurring in some cases of carcinoma are examples. The third and fourth groups of this classification contain practically all of the cases of auto-intoxication which come from the gastro-intestinal tract, and it is from this source that the trouble has arisen in the cases of conjunctivitis due to auto-intoxication which I have observed.

There are two processes, viz.: fermentation and putrefaction, which in the gastro-intestinal canal, bring about the production of large quantities of hurtful substances; and yet these processes are both intimately concerned with normal digestion. Fermentation occurs mostly in the stomach and has to do principally with the carbohydrates. On the other hand putrefaction takes place almost entirely in the intestines and albuminoid food is chiefly affected. As yet our knowledge of the bacteria con-

cerned in these processes is limited. Fermentation of the carbohydrates may be any one of four different kinds, viz.: lactic acid, butyric acid, acetic acid, and yeast fermentation, each of which is caused by a special bacterium. The absorption of two great quantities of the products of normal gastric digestion or of the poisonous products of abnormal fermentation may cause a wide diversity of symptoms which it is unnecessary to name here. The intoxications may be either acute or chronic.

The resulting products of putrefaction of albuminoids in the intestinal canal are somewhat more complex and are entirely different from those of the fermentation of carbohydrates. Some of the numerous ones that have been found are phenol, indol, skatol and tyrosin. To these, which are probably found in small quantities as products of normal putrefaction, must be added the poisonous bodies derived from certain abnormal putrefactive processes, such as ptomains, toxins, toxalbumins, etc., of which we know very little as yet. Many of these substances are found not only in the intestinal canal and fæces, but are also found in the urine under certain conditions, showing that they have been absorbed from the intestinal mucosa and have been filtered out of the blood by the kidneys. Recently there has been considerable discussion concerning the significance of indican in the urine in quantities more than a mere trace. It is now generally agreed, I believe that indican in itself is not particularly poisonous, but that its presence in the urine in any considerable quantity is an indication that abnormal putrefaction is taking place in the intestinal canal where other substances in addition to indican are being formed and absorbed which possibly may be poisonous and capable of doing considerable harm in the body.

You may, perhaps, wonder what all this has to do with conjunctivitis. Let us see. Judson Daland is authority for the following: (1) The circulation in the blood of the derivatives of intestinal putrefaction irritates the kidneys, and if continued during a long period of time may cause chronic interstitial and parenchymatous nephritis. (2) If kept up over a period of years arteriosclerosis may develop from the direct action on the walls of the blood vessels. (3) Catarrhal inflammations of the respiratory tract are aggravated by putrefactive poisoning. Now, among dermatologists it is well known that many of the diseases of the skin are caused by poisons absorbed from the intestinal tract and some physicians have obtained excellent results in the treatment of certain of these diseases by eliminating all kinds of

meat from the dietary for a number of weeks. Lastly, every physician is familiar with the picture of inflamed nasal and buccal mucous membranes and the skin immediately surrounding these orifices in children suffering with digestive disturbances. The conjunctiva is a mucous membrane composed of two layers,—the epithelium and the substantia propria. We have seen how these toxic substances irritate the epithelial cells in the kidneys, lungs and skin. The substantia propria consists of adenoid connective tissue, which is richly supplied with blood vessels and lymphatics, the walls of which are irritated and become diseased by these poisons, as Daland tells us. What more natural than that such a mucous membrane should be irritated and inflamed by the circulation through it of blood laden with these toxic substances? I have had a number of cases of a chronic form of conjunctivitis that persisted in spite of local treatment, which I believe were caused by such intestinal auto-intoxication. In several of them, the occurrence and recurrence of attacks of conjunctivitis, at the same time as were present marked constitutional symptoms of auto-intoxication, left no room for doubt as to the general condition being responsible for the inflammation of the conjunctiva. In one case in particular, where the condition could be watched and studied, the conjunctivitis was never present when the digestion was good and the bowels moved regularly, but invariably occurred when there was any marked disturbance in the gastro-intestinal canal. Local treatment of the conjunctivitis accomplished nothing so long as the trouble persisted in the gastro-intestinal canal. But the ocular trouble promptly subsided with little or no local treatment when the hygiene of the *prima via* was looked after. In this patient an attack can be brought on almost at will by eating freely of meats and neglecting the bowels so that they do not move regularly, while, on the other hand, an attack can soon be cut short and cured by avoiding all meats and the administration of a good dose of calomel or some of the mineral waters.

There is nothing especially peculiar about the character of conjunctivitis due to auto-intoxication to differentiate it from those cases due to other causes. As a rule, the cases I have observed, have very little or no secretion. The eyes feel uncomfortable, particularly with their use in artificial light, and the blood vessels of the bulbar conjunctiva are considerably engorged. The diagnosis must be made, however, from the history of indigestion or constipation together with other symptoms of auto-intoxication. Some of these symptoms are drowsiness, especially after eating, dizziness, periodic attacks of headache,

certain diseases of the skin, particularly of the erythematous or urticarial types, various nervous disturbances and aching and stiffness of the muscles which might be confused with or attributed to muscular rheumatism. The patients may not complain of any of these symptoms, but inquiry will usually develop the fact that they suffer with one or more of them at times.

Concerning the treatment of this form of conjunctivitis, the diagnosis of the cause points the way to the treatment. Local remedies are of little use. What is necessary is to stop the absorption of the poisons from the alimentary tract. Since their production is greatly increased by any condition which retards the progress of the food in its course through the gastro intestinal tract, we should be alert to find any such conditions which may be present. Constipation is most frequently found although there may be dilatation of the stomach where the food accumulates and undergoes fermentation. In either case, the condition present must be treated and remedied if we wish permanent results. Often the liver is at fault and needs attention. So we try to increase the secretory and excretory functions of the liver and give such medicines as will increase the natural peristaltic action of the stomach and bowels, as strychnin, aloin, cascara. To these may be added antiseptics, as salol, sulphocarbolates and betanaphthol. While these do not stop all fermentation and putrefaction, they do check such processes materially and lessen the poisons formed. Much as can be done in this way, possibly even more can be accomplished by the proper regulation of the diet. And here it is important to determine whether the poisons are being formed in the stomach or in the intestines. If in the stomach, carbohydrates should be interdicted as they undergo fermentation in the stomach. On the other hand, if the trouble is in the intestinal canal, meats should be avoided as they add to the putrefactive processes going on in the intestines. Having done what we can to check the formation of toxins, we can also accomplish much good often by helping to eliminate from the system those we cannot prevent being formed. To this end diuretics and diaphoretics may be administered and frequent baths and increased drinking of water advised. This, with plenty of outdoor exercise to increase the oxidation of poisons in the blood, will often be of material assistance.

I believe that a condition of acidæmia is often present, for which antacids should be given. I have found that acetanilid, which is one of the strongest antacids we have, relieves many of the symptoms more quickly than any other remedy I have used.

MEDICAL SOCIETIES.

XVI. INTERNATIONAL CONGRESS OF MEDICINE.*

Held at Budapest August 28th to September 4th, 1909.

SECTION ON OPHTHALMOLOGY.

Report by Professor Dr. W. Stock, Dr. von Szily (Freiburg)
and Dr. Cohen (Breslau).

TRANSLATED BY ADOLF ALT, M.D.

(Continued from December number.)

The president, Professor von Szily (Budapest), speaks of the fact that 25 years ago cocaine was introduced into ophthalmology, and greets Dr. Koller (New York) with honoring words.

Greef (Berlin).—*On the ætiology of trachoma.*

Greef repeats his findings and ideas concerning the trachoma bodies. As regards the ætiology he takes a step backwards, and concludes with the statement that further studies are necessary to prove that the bodies are the real trachoma germs.

Herzog (Berlin).—*On the initial stages of the trachoma bodies.*

At the first eye clinic at Budapest, Herzog has made histological studies on a large trachoma material. With the Heidenhain hæmatoxyline stain the bodies can be well shown in sections; they are found in the epithelium. The granules which de Santo found in the subepithelial tissue are plasmatoxytes or broken-up nuclei. In the initial stages the trachoma bodies show as elongated larger bodies which at first appear near the nucleus and are surrounded by a clear area. These by division form smaller bodies which together produce the "cap" usually found on the nucleus.

Gallenga (Parma).—*On trachoma bodies.*

With Professor Bertarelli, Gallenga has examined numerous trachoma patients, and states that he has found the intraepithelial bodies in this disease only and in no other conjunctival affection. They are therefore specific and of great value for the diagnosis.

*Klin. Mtsbl. fuer Augenhk., September, 1909.

Heymann (Breslau).—*Critical remarks concerning the trachoma bodies.*

The author has examined 112 cases at the University eye clinic at Breslau. The material taken from the eyes with the necessary caution was examined without his knowing the diagnosis. The typical intraepithelial bodies of Prowaczek were found in the subepithelial tissue, are plasmacytes or broken-up pure gonoblenorrhœa neonatorum; they were also found in great numbers, not in the fluid pus, after its removal, when the epithelial cells of the inflamed conjunctiva were examined in the same manner as in trachoma. (The smears are best treated with methylalkohol and then stained with Giemsa stain).

These facts must, of course, influence our judgment with regard to the trachoma bodies which now have been found in a disease of wellknown ætiology, i. e., the gonococcus.

Goldzieher (Budapest).—*The pathology of trachoma.*

We must adhere to a papillary and a granular form of trachoma, although the two may co-exist at the same time in the same eye. In either form trachoma is a disease of the deeper layers of the tissue of the whole conjunctival sac. True, it perforates the epithelium, but lies only in the subepithelial tissue and forms characteristic granular bodies. Only when to these is added a deep-seated infiltration can we make the diagnosis of trachoma. The follicular formations alone are found also in the most innocent follicular conjunctivitis.

The following is the pathology of recent, as yet untreated cases. The epithelium of the fornix shows but slight alterations. By mucinous degeneration the epithelia may appear like goblet or mucous cells. From the epithelium over the tarsus strands are often found to reach into the tarsus; at their end they have a lumen and secrete, the so-called trachoma glands. The subepithelial layer is the field for the trachoma granule. In the earliest stages vascular papillæ are found and around the lumen of the vessels accumulations of typical plasma cells. The blood-vessels pass into the tarsus. In later stages these accumulations become more like follicles, the plasma cells disappear and the lymphocytic elements increase in number. The formations now assume the character of the inflammatory granuloma and grow by cell formation at the periphery. When fully developed the granule shows in the center epithelioid cells with a pale nucleus and in the periphery typical lymphocytes. The appearance of phagocytosis marks the retrogressive metamorphosis of the

granuloma; the breaking up of the cells is accompanied by shrinking of the connective tissue and the formation of a scar.

Pannus trachomatosus can hardly be strictly considered as a progression of the specific inflammatory process upon the cornea. In reality it is only a superficial vascular keratitis, provided by disturbances of nutrition due to the high degree of conjunctival inflammation. Histologically it is a subepithelial accumulation of lymph cells with newly formed bloodvessels.

The transmission of trachoma takes place only by the direct immission of the fresh secretion from the diseased into a healthy eye. Experimentally trachoma was transmitted by introducing the contents of follicles into conjunctival wounds. The trachoma bodies (Greef and others) are still *sub judice*.

Goldzieher presented a patient in whom a severe pannus crassus, which had withstood all other treatments, had become clear by infection with gonorrhœa.

Sulzer (Paris).—*The prevention of trachoma.*

Trachoma was known to and has been described in antiquity. Its spread in the middle ages and modern time was due chiefly to the shifting of large masses, as by the migration of whole peoples, the crusaders, wars and the movements of compact masses of agricultural and other laborers. An exact history of trachoma begins with the wars of Napoleon the First. The expedition to Egypt especially (1789 to 1799) brought this disease into the foreground of epidemiological interest. We owe to the notes of Baron Larrey the excellent descriptions of trachoma at that epoch. Later on we find that epidemics of trachoma in the armies never fail to appear whenever a troupe visited a part of the country which had always been the seat of trachoma, or when recruits were received from there. The question often mooted, whether in the epidemics of trachoma in the first half of the nineteenth century we have to deal with real trachoma, has beyond any doubt been answered in the positive sense by the conservation of excellent engravings which exactly depict this disease in its course.

The littorals of the Mediterranean ocean have ever been the worst foci of trachoma. France is among these the one least affected. Belgium is an important focus. While Switzerland is altogether free from trachoma, we find in Germany an Eastern and Western focus of considerable intensity. Austria-Hungary shows much trachoma, especially in her Polish province and along the seashore. Russia possesses the biggest East European trachoma focus, Bessarabia being especially infected. Holland,

like Belgium, is a trachoma focus. As in Europe, trachoma is frequent in Asia, Africa and America. In Central Asia 900 trachoma patients are found in 1000 inhabitants. The littoral cities of Japan and China are badly infected. Africa is the classical country of trachoma. There is much trachoma in America; less in Canada than in the United States. Bolivia is almost free from trachoma; Brazil only partly so.

Trachoma is everywhere found among the poorer classes, in places where many people live crowded together in a narrow space, among sailors, prisoners, in the barracks and schools. The contagiousness of trachoma is proven only by clinical observation. The trachoma germ is as yet unknown and the manner of transmission is very little understood. We have to distinguish the pure trachoma from the forms modified by a mixed infection. The kind of the germ added (Weeks' bacillus, staphylococcus, diplobacillus, etc.) gives the epidemic its special character.

The chief prophylactic measure consists of isolation and treatment of the patients. The latter must receive proper instructions. That the prophylaxis is officially watched over is of the greatest importance in the army and navy, public schools, boarding schools and orphan asylums. Migrating laborers must be carefully watched, as well as emigrants. It is only just that every country should take care of its own trachomatous patients and not allow them to depart as long as they carry the danger of infection with them. On the other hand, the United States should not return immigrants with trachoma at once, but only after having stopped the infectious secretion, since such patients may give rise to epidemics while traveling on ships, etc. This question should be regulated by international treaties. The supervision of the pilgrims to Mecca who, as is well known, disseminate the disease in the worst way, is greatly to be desired.

Wherever prophylactic measures have been carried out earnestly against trachoma, they have proven successful. Trachoma has disappeared from the European armies. The efforts of the Prussian government have in East Prussia reduced the disease to half of its former frequency. Hungary, Russia and several states outside of Europe show continued success. An international conference would help greatly in the battle against this scourge of humanity.

Meller (Vienna).—Dr. Lindner at Vienna (Fuchs' clinic) has found a new method of staining with Giemsa solution, which shows the cell enclosures easier and more frequently. He has

with it succeeded in showing the trachoma bodies in old cases and in the epithelium of pannus at its periphery. Meller further stated that recently Schmeichler (Brünn) has, also, found the bodies in a case of blennorrhœa.

Goldzieher, Jr. (Budapest).—The follicles of trachoma are secondary changes which are not characteristic of trachoma alone. The beginning is a "plasmoma," springing from the epitarsoal bloodvessels, which at a very early stage invades the tarsus. It is, therefore, not a disease of the adenoid tissue. Normally this tissue is not constant; in the newly born it is absent, and later on it can often not be found. The corpuscular cells (*Körperchenzellen*) of Leber have nothing to do with the epithelium.

Radziejewski (Berlin).—The trachoma germ must invade the deeper tissues, otherwise the relapses could not be explained. With Heidenhain's hæmatoxylin stain he has found intracellular bodies deep in the follicles.

Elschnig (Prag) speaks against looking on the trachoma follicles as granulomata. A granuloma contains primarily bloodvessels, the trachoma granule is an infiltration to which later only bloodvessels are added. The epithelial pockets are generally sequestered parts of Meibomian glands. Elschnig warns against inoculation with gonorrhœa on account of the possibility of a general infection. He recommends mechanical treatment according to Kuhnt.

Wicherkiewicz has accidentally observed 10 cases of trachoma which were infected with gonorrhœa. In four weeks the gonorrhœa was cured and in from four to six weeks the trachoma. In spite of this he warns against the inoculation.

Pascheff (Sofia) thinks the trachoma bodies are characteristic and typical for trachoma.

Schiele (Kursk) states that by bouillon culture he has succeeded in 34 cases of acute trachoma in getting pure cultures of the trachoma bodies. With them he produced true trachoma in dogs.

Uhthoff (Breslau).—The cases reported by Heymann were perfectly recent cases of blennorrhœa neonatorum, with no mixed infection. He speaks against inoculation of gonorrhœa.

Axenfeld (Freiburg) declares Schiele's cultures to have been insufficient; a pure culture of trachoma bodies is out of question.

Whether the trachoma bodies are the real germ is still in doubt. On the other hand we cannot perfectly exclude the possibility of such bodies in not-trachomatous cases, because other undoubted specific germs, like the gonococcus, have their morphological double.

Leber (Berlin).—The ætiology of trachoma is now a cytological question. First changes appear in the nucleus which produce similar pictures as are found in degenerations in the intestines of the frog. The Heidenhain stain gives a better differentiation than Giemsa, which gives artificial products.

Greef.—Lindner's results, who found the bodies in old trachoma cases, are very interesting. Heymann's critical remarks, who found the bodies in blennorrhœa cases, are very important.

Herzog (Berlin).—The bodies which Heymann found are not identical with the trachoma bodies; they are nuclear buds, the so-called blennorrhœa bodies.

Heymann (Breslau).—If a mixed infection was possible, a mixed infection with trachoma ought to be met with once in a while. Giemsa's method is very good. The bodies which he found in blennorrhœa are at present in no way to be differentiated from the trachoma bodies. It is doubtful whether the sickle-shaped bodies shown by Herzog are identical with those of Prowaczek.

Goldzieher insists that the inoculation with gonorrhœa is recommended by him only when every other method of treatment has failed. Arlt gave up the inoculation solely because he thought that diphtheria could eventually be transmitted by it, which we can obviate nowadays.

McCallan (Cairo).—*Eye diseases in Egypt, and remarks on the effect of trachoma on blindness.*

The census of Egypt in 1907 gave the following result: Total inhabitants, 11,189,978. Monocular blindness, 363,702=3.25%. Binocular blindness, 148,280=1.32%. Total, 511,982=4.57%. An estimate of the blind from the statistics of eye hospitals in 1908 gave: monocular blindness, 584,870=4.6%; binocular blindness, 292,058=2.6%. Total, 816,868=7.2%. Compared with the United States of North America, the Egyptian blind are as 85 to 4,570. Thus far no improvement can be observed as concerns eye diseases and blindness in Egypt; but under the direction of

the author a comprehensive sanitary service is now inaugurated, which, in spite of the indolence of the people, promises an improvement.

Falta (Szeged).—*Contributions to trachoma therapeutics.*

Trachoma operations (squeezing out, scraping, excision) increase the visual acuity or at least prevent deterioration. They also, prevent pannus formation.

Weeks (New York) does not favor excision of the fornix. In many cases expression with previous scarification of the conjunctival surface does excellent service.

Likiernik (Lodz) shows a simple glass rod for the expression of follicles from the retrotarsal fold which the patient may use at home. It consists of a glass rod with a ball at one end over which the lid can be turned and stretched.

Wicherkiewicz (Krakau).—In the first stages bichloride of mercury 1:1000 to 1:2000 is the best; if at this stage granules are visible, he uses partial galvanocautery. In the second stage, that of softening, he especially advises expression; yet he uses no instrument, but the fingers. In papillary trachoma, massage with glass rod and ball and instillations of 10 to 20 per cent. antipyrin act splendidly.

Kuhnt (Bonn) does not think that expression alone is sufficient in many cases. Expressing with the fingers does not lack in danger for the physician and is insufficient. Falta's instrument he considers superfluous.

Ottava (Budapest) shows a spatula he uses.

Kuticic (Agram) speaks for massage.

McCallan (Cairo), from his experience, pleads for conservative treatment. Only when the tarsus is greatly thickened he advises the exceptional excision of the cicatrized retrotarsal fold.

Sulzer (Paris) speaks on the dark sides of the American immigration laws.

Falta (Szeged) defends his instrument against Kuhnt.

Lagrange (Bordeaux).—*Treatment of chronic glaucoma.*

The non-operative treatment must not be undervalued. Sometimes it alone suffices and it is always necessary to complete the

effect of surgical interference. Of the extraocular methods, the removal of the nervus nasalis must be considered as successful. Resection of the sympathetic nerve is apt to produce a decrease in intraocular tension, but its effect does not last more than a few weeks, after which the tension rises again.

Of the intraocular operation in chronic glaucoma, we have iridectomy, sclerotomy, section of the iris angle, iridodialysis, cyclodialysis, sclero-cyclo-iris puncture, Hancock's operation, posterior sclerotomy, and iridecleisis. To these the author adds sclerectomy and sclerecto-iridectomy.

In chronic glaucoma the iridectomy is the more successful the higher the tension.

Sclerotomy should if possible be performed in such a manner that puncture and counterpuncture lie in the region of Schlemm's canal, and that when the knife is withdrawn the iris angle is incised. The success of iridectomy as well as sclerotomy depends on an extensive opening of the exits for the fluids from the eye. The proof that neither of these operations can satisfy the clinician with its results is given by the great number of operative methods which have been invented to replace them.

It has been observed that the best results are reached when tension is high, when the closure of the wound is not firm, and it has been argued from this that leaving a fistula is the essential point. The consequent desire was to afford an easy exit to the fluids under the conjunctiva. The point was by an exact incision and without incarceration of the iris to shape a way which might serve for the exit of the fluids from the anterior chamber as well as to form a communication between the suprachoroidal space and the anterior chamber. The new method of operating the technique and the anatomical results of which are given in detail fulfills both conditions. That is, a lasting fistulous canal is formed which leads under the conjunctiva. A broad piece of sclera is excised above the root of the iris. This sclerectomy has proven successful in chronic glaucoma with intermittent rise of tension. In cases of continued high tension this fistula formation is supplemented with an iridectomy, sclerecto-iridectomy.

Meller (Vienna) recommends Lagrange's operation, especially for glaucoma simplex.

Fukala (Vienna).—*What must we do when after a glaucoma operation the anterior chamber does not refill?*

In such cases the anterior chamber may be re-established by a procedure which he has often tried. First the eyeball must be rendered absolutely insensitive by cocain. Then the whole

length of the incision is cauterized with the galvanocaustic loop. Since this is caused by a weak tendency to closure of the wound and particularly so at the angles of the wound, it is necessary especially to cauterize these energetically. This cauterization must be repeated every 2 or 3 days till the anterior chamber is re-established, about 4 to 8 times. In the absence of a galvanocauter a thermocauter may be used.

Fukala (Vienna).—*How to make the eyeball absolutely insensitive before cataract and glaucoma operations.*

A 2 per cent cocain solution is not sufficient. He injects with a Pravatz syringe 1 to 1½ gradations of a 15 per cent. cocain solution on the side opposite the wound. This produces a vesicle; 15 minutes later the eyeball is so perfectly numb that the patient feels absolutely no pain. It is of value to add the same quantity of some adrenalin praeparation. It is contraindicated in children below 15 years, in marasmus and with severe organic heart troubles.

Uhthoff (Breslau).—When in desperate cases after an operation for glaucoma the glaucoma is not arrested another operation must be resorted to, for instance, first iridectomy then sclerotomy, cyclodialysis, posterior sclerotomy. When after a cataract extraction the anterior chamber is not refilled in 14 days, the eye need not be lost, it may still be refilled later on.

Schirmer (Strassburg) advocates scopolamin morphin narcosis for unruly patients. This reduces the intraocular tension considerably.

Bloch (Ratibor) asks whether tension was measured with a tonometer and whether scopolamin did not produce an attack of glaucoma.

Schirmer.—The scopolamin is not instilled, but injected subcutaneously.

Wicherkiewicz (Krakau).—When after cataract extraction the anterior chamber is not refilled, there is glaucoma present, therefore miotics must be used. Only weak cocain solutions ought to be instilled. They suffice and hypotonus and striped keratitis are avoided. In some cases of glaucoma a posterior crossed sclerotomy is of value. He lifts off sufficient conjunctiva, cuts carefully in a meridional direction down to the choroid—no deeper—and then makes a cross cut.

Lagrange again recommends his method as being without danger in chronic glaucoma. In acute cases iridectomy is still in place.

Meller has not seen a decrease of tension in scopolamin morphin narcosis, but often an increased frequency of the pulse. The complications of iridosclerectomy are not apt to occur in glaucoma simplex for which Lagrange primarily advocates his method; in other cases, however, they have to be counted with.

Schmidt-Rimpler (Halle).—*Remarks concerning the origin of sympathetic ophthalmia.*

The author states that his theory of transmission has not been shaken by more modern experimental studies, especially those of Roemer.

Schirmer (Strassburg) formulated two oppositions to Schmidt-Rimpler's theory: (1) Only individuals who are previously the host of the infectious material can, according to this theory, develop a sympathetic ophthalmia. As far as is known, however, it is usually healthy individuals who suffer. (2) Against the importance of the transference of irritation, that sympathetic ophthalmia develops only with infectious iridocyclitis.

Buys and Coppez (Brussels).—*Graphic notations of nystagmus.*

We must distinguish between pendulating nystagmus and nystagmus "a ressort." To the last group belongs vestibular nystagmus, to the former miner's nystagmus. With nervous affections both forms are observed. These types may be graphically depicted with Marrey's drums as Buys has described. The nystagmography furnishes characteristic differences.

Kuhnt (Bonn).—*The surgical treatment of concomittant strabismus.*—Gives his views previously published.

Wicherkiewicz (Krakau).—With pronounced convergence advancement is often insufficient. To operate very early is dangerous. In divergence tenotomy of the external rectus and horizontal nasal suture beginning at the caruncle often gives good results.

Herzog (Berlin) recommends to include Tenon's capsule in this suture.

Kuhnt refutes Herzog's opposition to his technique.

ABSTRACTS FROM MEDICAL LITERATURE.

By J. F. SHOEMAKER, M.D.,

ST. LOUIS, MO.

DANGER ARISING FROM USE OF PLATED INSTRUMENTS IN OPHTHALMIC OPERATIONS.

W. C. Rockcliffe (*Brit. Med. Jour.*, July 5, 1909) directs attention to the danger of using plated instruments in operations on the eye, as severe complications may occur from the plating peeling off and remaining in the wound. He reports such an occurrence in his personal experience, where acute panophthalmitis developed after a cataract extraction in which the plating came off during the operation evidently and was recovered from the anterior chamber. He attributes the complication in this case to this cause.

ALTERATIONS IN THE COLOR FIELDS IN CASES OF BRAIN TUMOR.

James Bordley, Jr., and Harvey Cushing (*Arch. of Oph.*, September, 1909) believe that the views which have generally been held concerning certain changes in the visual field, viz.: that concentric contraction of the field for form with dyschromatopsia (reversal of color fields), and a predilection for red are pathognomonic of hysteria, need revising. While it may be true that these changes are characteristic of hysteria they have found them so frequently present in cases of brain tumor that they consider them characteristic of this condition also. Whether they are produced by similar conditions acting as the intracranial basis for the symptom under both circumstances they leave an open question, but they consider it significant that nearly all the patients that have come for operation for brain tumor were for some time earlier in their affliction considered to be cases of hysteria. The greatest change in the color fields occurs in the blue which at times may be contracted so that it is within the green, and indeed may go so far as to amount to blue blindness. This condition disappears and the color fields assume their normal relation very soon after operative procedures which relieve the intracranial pressure. Inasmuch as tabes, multiple sclerosis, etc., affect the red first it would appear that this might be of importance in differential diagnosis, disturbance of the red field being

an indication of organic disease while changes in the blue field would indicate functional disturbance.

The authors have included fifty-six cases in their series and have examined many other cases of brain tumor. In these fifty-six cases, however, they have been able to eliminate most sources of error and their findings are therefore of special value. In the following "the figures relate to the conditions which were present at the time of the first examination, often before the diagnosis of tumor was certified:"

	Cases.
"1. Interlacing of color lines the predominant feature.....	25
2. Color inversion the predominant feature	9
3. Hemachromatopsia without corresponding change in form field	4
4. Islands of blue blindness (scotomata).....	3
5. Blue blindness	3
6. Complete green blindness	1
7. Complete achromatopsia	5
8. No color change whatsoever	6

"The striking features are: (1) The fact that in many of the charts the fields for form are unchanged, while there is a very definite change in the fields for color. Fifty out of fifty-six cases show color changes; only eighteen show definite form changes. (2) In four of the cases in which the colors interlaced tumors were found, though there was no choked disk. (3) In forty-one out of forty-two cases examined subsequent to operation, whether palliative or radical, the color lines became restored to their normal relative position.

"The dyschromatopsia seems to depend in some fashion upon an increase of intracranial tension, the relief of which usually causes its early subsidence, and it is possible therefore that it may characterize organic lesions other than tumor."

A THEORY OF DIPLOPIA.

Abdullah K. Sallom and Mary Sallom (*Ophthalmoscope*, June, 1909) review briefly some of the well known anatomical and pathological facts relative to the visual function and describe their theory as to how diplopia is produced.

They summarize as follows:

1. That fibres coming from identical points of the retinae end around and influence only one cell in the lower visual centre. This cell takes up the impulse and carries it to the cortex.

Therefore, whether the impulse is carried by the fibre coming from the right eye or from an identical point in the left eye, or both, but one cell can be influenced and but one image can be formed.

2. If non-identical points are stimulated, two cells in the lower visual centre are influenced. Each cell carries the impulse which it had received to the cortex. Two images are formed since two impulses have been received.

3. When one eye is turned inward, the image formed by the opposite eye, on account of the anatomical structure, will be external to the image formed by the one on the same side. Therefore, both images will be projected to the opposite field of vision, and the image formed by the opposite eye will be in either visual field, external to the image formed by the eye on the same side. Hence the images correspond in position to the eyes.

4. For the same reason, when one eye (for example, the left) is turned away from its fellow, its image will be formed in the left cortex, and the image from the right eye will be formed in the right cortex. The right image is projected to the left field of vision, and the left image is projected to the right visual field—hence the images are crossed.

5. As there is really no nasal half in the fovea where the fibres that cross are grouped, and no temporal half where the fibres that go to the same side are situated, and as the fibres going to the same side and those passing to the opposite side are situated side by side, therefore only one-half of the image is formed on the right side of the cortex, while the other half is formed on the left; the image being made whole by the fibres which connect the two visual areas in the cortex.

MINERS' NYSTAGMUS.

T. Harrison Butler (*Ophthalmoscope*, August, 1909) reviews the principal facts in connection with miners' nystagmus and enumerates the chief theories advanced as to its cause. These are (1) that it is due to cramp of the elevator muscles of the eyes and lids. Snell, in England, Dransart in France, and Nieden in Germany have held to this theory. (2) Bad light in the mine causes loss of central fixation, nystagmus resulting just as it does with a central leucoma in a young child in which fixation is lost. (3) Excessive accommodation in a bad light (Romiée's theory). (4) It is caused by impulses from the semicircular canals, the position of the miner at work having altered the functions of these canals (Peter's theory). (5) In-

halation of fire damp, chiefly composed of marsh gas, and the bad condition of the air in the pit cause it. (6) Lastly, it is central cerebral disturbance with failure of co-ordination.

Of these theories the last is the only one that accounts for all the facts. That poor light has something to do with the production of this disease seems to be proven by the fact that it was first described shortly after the introduction of the safety lamps which reduced the illumination very greatly, and by the further fact that since the improvement of the safety lamps which greatly increases the illumination the number of cases is decreasing. There must be other factors, however, as the disease is not found in workers in zinc mines, in boilers, or in photographic dark rooms. It is suggested that the crystalline surface of the freshly fractured coal presents many reflecting facets which may cause a struggle between the two visual fields as each eye sees a different facet. In this way co-ordination is disturbed. Butler says: "We are, finally, logically compelled to admit that miners' nystagmus, like that which appears in disseminated sclerosis, is a cerebral symptom; it is the result of the miners' work, which in some way which we cannot understand disturbs the ocular equilibrium in such a manner that rhythmic oscillations appear." The treatment of the disease is to have the patient quit, permanently, work in the pit, when a cure will often result in a few months, although some cases last for years and others are never cured.

SPECIAL FORMS OF LOCAL REACTION IN THE EYE AFTER SUBCUTANEOUS INJECTIONS OF OLD TUBERCULIN.

J. Rupperecht (*Medizinische Klinik*; Aug. 8, 1909) reports two cases, one of which provides important clinical evidence that tuberculosis is a true ætiological factor in chorioidal inflammations. This case had several fairly fresh, isolated chorioidal patches in both eyes, but after a subcutaneous injection of 10 mg. of old tuberculin developed a fresh, very diffuse chorioidal infiltration extending to the papilla in each eye. In the other case (one of serous cyclitis), after a subcutaneous injection of 5 mg. of old tuberculin, some hyphæma appeared in the anterior chamber, associated with circumscribed ciliary injection and increased deposits on Descemet's membrane, thus making the differential diagnosis between sympathetic and tuberculous cyclitis.

THE INTERNATIONAL AMERICAN CONGRESS OF MEDICINE AND HYGIENE.

Buenos Aires, Argentine Republic, May 25th, 1910.

The International American Congress of Medicine and Hygiene of 1910, in commemoration of the first centenary of the May revolution of 1810, under the patronage of His Excellency, the President of the Argentine Republic, will be held May 25th in Buenos Aires, Argentine Republic. In order to facilitate the contribution of papers and exhibits from the United States, there has been appointed by the President of the Congress, Dr. Eliseo Cantón, and the Minister of the Argentine Republic at Washington, a committee of propaganda of which Dr. Charles H. Frazier (Philadelphia, Pa.) is Chairman and Dr. Alfred Reginald Allen (Philadelphia, Pa.) is Secretary.

The Congress has been divided into nine sections, each section being represented in the United States by its chairman in this Committee of Propaganda as follows

Section 1—Biological and Fundamental Matters: Dr. W. H. Howell, Chairman, Baltimore, Md.

Section 2—Medicine and its Clinics: Dr. George Dock, Chairman, New Orleans, La.

Section 3—Surgery and its Clinics: Dr. John M. T. Finney, Chairman, Baltimore, Md.

Section 4—Public Hygiene: Dr. Alexander C. Abbott, Chairman, Philadelphia, Pa.

Section 5—Pharmacy and Chemistry: Dr. David L. Edsall, Chairman, Philadelphia, Pa.

Section 6—Sanitary Technology: Dr. W. P. Mason, Chairman, Troy, N. Y.

Section 7—Veterinary Police: Dr. Samuel H. Gilliland, Chairman, Marietta, Pa.

Section 8—Dental Pathology: Dr. George V. I. Brown, Chairman, Milwaukee, Wis.

Section 9—Exhibition of Hygiene: Dr. Alexander C. Abbott, Chairman, Philadelphia, Pa.

It will not be necessary for one contributing a paper or exhibit to the Congress to be present in person. Arrangements will be made to have contributions suitably presented in the absence of the author. The official languages of the Congress will be Spanish and English.

Members of the following professions are eligible to present papers or exhibits: Medicine, Pharmacy, Chemistry, Dentistry, Veterinary Medicine, Engineering and Architecture. Papers may be sent direct to the Chairman of the particular section for which they are intended, or to Dr. Alfred Reginald Allen, Secretary, 111 South 21st Street, Philadelphia, Pa.